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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/930,757	08/15/2001	Stanley K. Ling	10559-485001/P11402	2057

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EXAMINER

MEEK, JACOB M

ART UNIT PAPER NUMBER

2637

DATE MAILED: 11/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/930,757

Applicant(s)

LING ET AL.

Examiner

Jacob Meek

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 15 August 2001.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1 - 29 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4, 8-10, 14-16, 20-25 and 29 is/are rejected.
- 7) ☒ Claim(s) 5-7, 11-13, 17-19, 26-28 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 February 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some    \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Double Patenting*

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

1. Claims 1, 8, and 14 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, and 6 of U.S. Patent No. 6,665,337 (Girardeau, '337). Although the conflicting claims are not identical, they are not patentably distinct from each other because both sets of claims result in a similar result in adaptive equalizer circuit.

Regarding claims 1, 8, and 14 Girardeau discloses:

pre-loading a fixed set of coefficients on at least one of the plurality of adaptive filters to partially equalize the received signals;

adapting at least one of the remaining adaptive filters with the partially equalized received signals such that the data transceiver obtains initial activation;

and adapting the at least one pre-loaded adaptive filter after initial activation of the data transceiver has been obtained.

Girardeau's ('337) claimed preload technique would be obviously identical to generating first coefficients for use by step of the instant application because the preloading of fixed

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coefficients would result in a very similar result to the generation of first coefficients for use by the adaptive equalizer.

Girardeau's ('337) claimed adapting of adaptive filters technique would be obviously identical to generating second coefficients for use by the adaptive equalizer of the instant application because the adapting of adaptive filters technique would result in very similar results to the generating of second coefficients for use by the adaptive equalizer. The generating of coefficient step would appear to be inherently part of the adaptation process.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

2. Claims 1, 14, and 23 are rejected under 35 U.S.C. 102(a) as being anticipated by Ling et al (US Patent 6,167,082).

With regard to Claim 1, Ling teaches a method of generating first coefficients for use by the adaptive equalizer (feed forward equalizer) reduce pre-cursor intersymbol interference in an input signal (see column 4, lines 9 – 24); generating second coefficients for use by the adaptive equalizer to whiten noise the input signal (see column 6, line 56 – column 7, line 13).

With regard to Claim 14, Ling teaches an adaptive equalizer which generates first coefficients for use by the adaptive equalizer (feed forward equalizer) reduce pre-cursor intersymbol interference in an input signal (see column 4, lines 9 – 24); generating second coefficients for use by the adaptive equalizer to whiten noise the input signal (see column 6, line 56 – column 7, line 13).

With regard to Claim 23, Ling teaches an adaptive equalizer with a feed forward filter which reduces pre-cursor intersymbol interference (see column 6, lines 56 – 59) and whitens

noise (see column 6, lines 63 – 65); a feedback filter which obtains post-cursor intersymbol interference in a signal that corresponds to input signal (see column 6 lines 59 – 60); and circuitry which removes post-cursor intersymbol interference from input signal (see column 6, lines 60 – 62); where feed forward filter includes separate first and second coefficients, first coefficients to reduce pre-cursor intersymbol interference (see column 6, lines 56 – 59, where this is interpreted as 1<sup>st</sup> set of coefficients) and second coefficients to whiten noise (see column 6, lines 59 – 65, where the training disclosed is interpreted to be updating 2<sup>nd</sup> set of coefficients).

***Claim Rejections - 35 USC § 103***

3. Claims 2 – 4, 8 – 10, 15, 16, 20 – 22, 24, 25, and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ling et al in view of Bergmans (US Patent 4,905,254).

With regard to claim 2, Ling teaches the method of Claim 1, however Ling is silent with respect to 1<sup>st</sup> and 2<sup>nd</sup> coefficients being used in 1<sup>st</sup> and 2<sup>nd</sup> set of taps of feed forward filter. Bergmans teaches use of feed forward section for cancellation of precursor and postcursor ISI along with a partitioning of taps (see column 12, lines 34 – 56). It would have been obvious to one of ordinary skill of the art at the time of invention to provide a split tap arrangement in the feed forward equalizer to provide a means to cancel pre and post cursor ISI and noise thus improving the quality of symbol decisions (Bergmans, see column 1, lines 36 – 42).

With regard to claim 3, Ling in view of Bergmans teaches the limitations of Claim 2, however Ling is silent with respect to first coefficients. Bergmans teaches the his feed forward section can be used to cancel pre-cursive and post-cursive ISI where pre-cursive ISI is interpreted to be input signal and noise (see column 12, lines 35 - 56). It would have been

obvious to one of ordinary skill of the art at the time of invention to provide a split tap arrangement in the feed forward equalizer to provide a means to cancel pre and post cursor ISI and noise thus improving the quality of symbol decisions (Bergmans, see column 1, lines 36 – 42).

With regard to claim 4, Ling in view of Bergmans teaches the limitations of Claim 2, however Ling is silent with respect to second coefficients. Bergmans teaches the his feed forward section can be used to cancel pre-cursive and post-cursive ISI where post-cursive ISI is interpreted to be an estimate of the noise (see column 12, lines 35 - 56). It would have been obvious to one of ordinary skill of the art at the time of invention to provide a split tap arrangement in the feed forward equalizer to provide a means to cancel pre and post cursor ISI and noise thus improving the quality of symbol decisions (Bergmans, see column 1, lines 36 – 42).

With regard to claim 8, Ling teaches the method of claim 1, however Ling is silent with respect to his method being produce on machine-readable media. Ling teaches his method is useful for digital communications system, which are known to be microprocessor controlled and therefore would require a means for loading required program material. It would have been obvious to on of ordinary skill in the art at the time of invention to provide machine-readable media to facilitate the loading of programs to make a system operable.

With regard to claim 9, Ling teaches the method of claim 8, with the additional limitations of claim 9 being taught by Ling in view of Bergmans in claim 2 along with motivation to combine described by claim 2.

With regard to claim 10, Ling in view of Bergmans teaches the limitations of Claim 9 however Ling is silent with respect to first and second coefficients. Bergmans teaches his feed forward section can be used to cancel pre-cursive and post-cursive ISI where pre-

cursive ISI is interpreted to be input signal and noise (First coefficients, see column 12, lines 35 - 56) and post-cursive ISI is interpreted to be an estimate of the noise (second coefficients, see column 12, lines 35 - 56). It would have been obvious to one of ordinary skill of the art at the time of invention to provide a split tap arrangement in the feed forward equalizer to provide a means to cancel pre and post cursor ISI and noise thus improving the quality of symbol decisions (Bergmans, see column 1, lines 36 – 42).

With regard to claim 15, Ling teaches the apparatus of claim 14, with additional limitations of claim 15 being taught by claim 2, along with motivation to combine described by claim 2.

With regard to claim 16, Ling in view of Bergmans teaches the apparatus of Claim 15, with additional limitations of claim 15 being taught by claim 10, along with motivation to combine of claim 10.

With regard to claim 20, Ling teaches the apparatus of claim 14, however Ling is silent with respect to his apparatus having memory that stores machine-executable instructions. Ling teaches his method is useful for digital communications systems, which are known to be microprocessor controlled and therefore would require memory for storing machine-executable instructions. It would have been obvious to one of ordinary skill in the art at the time of invention to provide memory to facilitate the execution of machine-executable instructions to make a system operable.

With regard to claim 21, Ling teaches apparatus of claim 14, with Ling teaching functional blocks (see Figure 8, 810, 860, 830, 840, 812, 862), which are interpreted by examiner as generating first and second coefficients, and are further interpreted by examiner to be discrete HW components.

With regard to claim 22, Ling teaches the apparatus of claim 14 with Ling teaching the functional blocks (see Figure 8, 810, 860, 830, 840, 812, 862), which are interpreted by the examiner to be discrete HW components, and are further interpreted to include logic gates to perform claimed functionality.

With regard to claim 24, Ling teaches the apparatus of claim 23 with the additional limitations of claim 24 being taught by claim 2, along with motivation to combine of claim 2.

With regard to claim 25, Ling in view of Bergmans teaches the limitations of Claim 24 with the additional limitations of claim 25 are taught by claim 10, along with the motivation to combine of claim 10.

With regard to claim 29, Ling teaches the apparatus of claim 23 with Ling also teaching his system addresses issues with CAP and QAM systems (see column 1, lines 51 – 61), which are known to be used in HDSL systems.

#### ***Allowable Subject Matter***

4. Claims 5, 6, 7, 11, 12, 13, 17, 18, 19, 26, 27, and 28 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

#### ***Other Cited Prior Art***

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Chevillat et al (US Patent 5,031,195) and Jonsson et al (US Patent 6,414,990) both teach methods of adaptive equalization of modems.



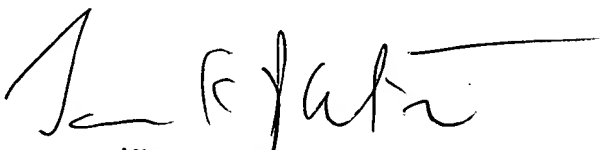
***Other Cited Prior Art***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jacob Meek whose telephone number is (571)272-3013. The examiner can normally be reached on 8:00 - 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay Patel can be reached on (571)272-2988. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JMM

  
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SUPERVISORY PATENT EXAMINER